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LECTURES ON THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE HEART.

BY W. W. GERHARD, M. D.

LECTURE XVIII.

The *sounds* of the heart furnish us with one of the most important means of diagnosis, but require to be studied in the healthy state before becoming of practical use as signs of disease. The sounds of the heart are two in number, and are designated as first and second sound. The first occurs during the systole or contraction of the heart, and is synchronous with it; it is the longer of the two, and occupies very nearly one-half the whole period of the heart's action, and consequently the first sound may be heard during one-half of the life of each individual. It is described as prolonged but dull, and it may be very readily learned by placing the ear over the heart, while the hand is applied to the pulse of the patient; the vibration of the artery and the sound are heard at the same time, although the sound of the contraction precedes a little the pulsation of the wrist, but the difference is so slight as to be scarcely perceptible. The cause of this sound is differently explained; probably it is not a single cause, but a combination of two, which may in part account for any difference of opinion. The principal cause is certainly the muscular contraction of the heart, which is abundantly capable of producing a sound, as may be verified by experiments upon the hearts of animals. Take the heart of a calf or sheep from the body after sensation has been destroyed, but before the animal is quite dead, and by applying a stethoscope upon it, a sound will be distinctly heard, which is identical with, although weaker than the first sound of the heart; in this there is of course no cause for the sound but pure muscular contraction. But in the living body it is very probable that the sound is in part produced by the friction of the blood against the semilunar valves of both aorta and pulmonary artery; this cause, however, which is not so easy to demonstrate, is by no means so powerful as the muscular contraction. The

second sound is the proper valvular sound, and is shown by direct experiment to be caused by the quick contraction of the semilunar valves, especially those of the aorta, which are much stronger than those of the pulmonary artery. If these valves be tied by passing a needle through them in the heart of an animal deprived of sensation, but still living, the second sound is immediately destroyed. The character of the sound is totally different from that of the first; it is very short and sharp, and is properly designated by the term clacking. It follows immediately after the first, and is synchronous with the diastole of the heart; when the semilunar valves are diseased, or prevented from acting by the excessive turgescence of the heart with blood, the second sound is weakened or destroyed. After the second sound, a period of repose, occupying nearly one-half of the time of each complete action of the heart, succeeds, and is again followed by the first sound.

The sounds of the heart are, as may readily be seen, very regular in their succession and proportion, and when these are deranged, a disturbance of the heart's action may be fairly inferred. Should the change be very decided and permanent, the cause must nearly always be sought in the valves themselves; but if slight and temporary, it is often a mere muscular or functional disturbance, not dependant on organic disease.

The sounds of the heart may be altered in several ways: they may be changed in character, or merely diminished or increased in intensity. The alteration of the sounds may be limited to a slight harshness, or the natural tone may be totally changed; these characters, however, differ only in degree, and not in any really important respects.

The first sound is most frequently altered. When simply increased in loudness, it depends either upon a temporary condition of the heart, that is, a simple febrile movement or nervous action, in which case the sound will after a time subside to the natural state,

or it arises from a hardening of the muscular structure of the heart, perhaps conjoined with slight obstruction of the semilunar valves. In the latter case the increased loudness, or, to use an equivalent expression, the roughness of the sound may continue for a very long period.

If the roughness is increased, it passes into the bellows or rasping sound. The former of these is less marked than the latter, but a bellows sound may be defined, and it is generally described, as a prolonged and purring sound, generally heard in the first sound of the heart, and therefore produced chiefly by muscular contraction, although it may arise from alterations at the auriculo-ventricular valves, and then it occurs during the diastole of the heart. Like all sounds, it is much more easy to point out than to describe in words. As a short definition, the term bellows sound, which is given to it, from resembling the sound produced by blowing strongly in a bellows, is probably as good a description as any other. The bellows sound is often produced by simple nervous disorder of the heart, especially in those cases in which it is connected with anemia or chlorosis, and it then is very loud and almost musical in its tone; and far from being confined to the heart, it may be distinguished along the whole of the large arteries, especially the carotids and subclavian, by applying the stethoscope opposite to them. The pressure of the stethoscope has probably some influence in favouring the production of the sound at the carotids, but is insufficient to account for it; so that we are obliged to ascribe it to the peculiar motion impressed upon the thin and watery blood by the spasmodic action of the heart. When the bellows sound depends either on a hypertrophied ventricle urging the blood very rapidly through a narrow or non-dilated semilunar valve, or driving it back through a dilated auriculo-ventricular opening, it is more persistent, more uniform, and is less musical, but more harsh than when it arises from a mere nervous disorder; the same character is found when the sound is heard during the diastole from regurgitation through the semilunar, or contraction of the auriculo-ventricular valves. Still it is in many cases difficult to distinguish between the bellows sound of mere functional disorder and that dependant upon organic disease, unless

there are some other signs of a permanent lesion.

The rasping sound of the heart is much rougher than the bellows sound, and is tolerably well described by the term which designates it—resembling the sound of a rasp forced through soft wood more than any other sound. It never depends upon simple functional disorder of the heart, but arises from some actual obstruction to the circulation of the blood, seated at the orifices of the heart, and therefore dependant upon changes in the valves. It may arise from acute as well as chronic disease; when the obstruction is acute, it is the result of endocarditis, and the thickening of the valves is partly caused by depositions of lymph, and partly by thickening of the fibrous tissue, which forms the body of the valve, and, as the inflammation declines, the sound will gradually increase, provided the morbid product has not become completely organised, in which case the rasping sound may be permanent. The sign is scarcely ever heard during the diastole of the heart, for it requires a considerable force in the current of blood, and the act of dilatation is rarely sufficient to produce this at the valvular orifices. Such is not, however, the case when the aorta is much dilated, for the reflux of the blood is almost as powerful as its forward current, and the rasping is therefore double, like the forward and backward motion of a saw rather than of a rasp; hence it is then called the sawing (*bruit de scie*) instead of the rasping sound, and is one of the best diagnostic characters of aneurism of the aorta. The double movement and the accompanying sound are so peculiar that it can scarcely be mistaken for any other sign. The saw-sound is heard also at times when the mitral valve or the tricuspid is much altered, so as to destroy its functions and convert the auriculo-ventricular opening into a rough passage for the blood.

ORIGINAL COMMUNICATION.

NOTES ON MYOTOMY AND TENOTOMY.

BY REYNELL COATES, M. D.

To the Editors of the Medical Examiner.

GENTLEMEN,—Having become more intimately connected with your Journal than was expected when this series of essays was commenced, the unforeseen length to which it has been extended is not the only reason for bring-

ing it to a conclusion for the present. It requires a greater devotion of time than can be spared from the demands of other duties at this season of the year. Deferring, then, till some more suitable occasion, the consideration of the construction of the various forms of apparatus, and the contemplated remarks on other applications of Myotomy to the cure of deformities or other defects of motion, (most of which, fortunately for humanity, *have condemned themselves*.) I propose to add a few words on two or three points to which allusion has been made in the preceding papers, and finish with two or three general conclusions.

In the contest between the "*machinists*" and the "*tenotomists*,"—between the advocates of the simple mode of treatment, and the more complex—the principal grounds of dispute relate to the relative amount of time expended and the degree of pain suffered during the treatment in either case.

It is certainly surprising, at a first glance, that, in the only tolerably well reported series of cases in which the mechanical treatment, so called, has been exclusively employed, the time occupied in effecting what is termed a cure, is not materially, if at all, longer than that represented to be occupied by the tenotomists,—I allude to the cases contained in the papers of Dr. Heber Chase in the *American Journal of the Medical Sciences*, for January, 1841. The general accuracy of these cases I have been at the pains to substantiate by personal examination. This, however, becomes less surprising when we consider that the necessity for mechanical after-treatment is not removed by tendon cutting, and that in this after-treatment the mechanical forces act at a material disadvantage in consequence of the preceding operation. But I hold it to be undeniably a misfortune when the cure, so called, is effected *rapidly*. Where bones are to be remodelled, ligaments permanently elongated or shortened, original joints changed in their form and position, and sometimes newly formed joints to be destroyed and obliterated, it appears plain to me—and observation bears out the conclusion,—that the more rapidly the foot is brought into the condition styled *a cure*, the more considerable and intractable must be the permanent deformity. It is even possible for an awkwardly constructed apparatus to produce undue abduction, or, in other words, a commencement of a valgus of the anterior part of the foot while the ossa calcis and astragalus continue in the attitude characteristic of the first stage of varus! It is more than probable, from the description of the celebrated case of M. Delpech, as given before the Royal Academy, by M. Bouvier, that this very deformity was produced after tenotomy by that unfortunate surgeon. These remarks will be sufficient, I think, to convince any cautious practitioner that the rapidity of action in such cases, which looks so *brilliant* before a class, and proves so captivat-

ing to the vulgar and the ignorant, is undesirable for the patient,—if it be not an evidence of decidedly bad surgery,—at least in the case of children over six years of age. Very slight deformities of the tarsus are often productive of most serious inconvenience. I have been consulted within a few days in the case of a gentleman in extensive business who has been rendered nearly powerless in the transaction of ordinary affairs by a slight adduction of the foot, the precise nature of which cannot be accurately ascertained. It was supposed to be the result of a fracture of the tibia involving the ankle joint, accompanied by an injury of the astragalus and the os calcis which escaped attention at the time of the accident. The present condition of the tarsus—some months after the injury—displays a not very explicable subluxation of these last named bones, accompanied by a considerable deposit of callus between the outer sides of the astragalo-calcanean and the astragalo-fibular connections. The consequences of the deformity are such as to retain the foot in a slight state of adduction, interfering absolutely with the power of the muscles to carry the foot outwards, and compelling the patient to walk somewhat upon the outside of the sole. The inconveniences resulting are such as induce him to submit to a treatment requiring many months of time and very considerable expense with the view to promote facility in the transaction of business.

There can be no doubt, in the present state of physiological investigation, that the osseous tissue, in common with all other tissues, is subject to an almost indefinite series of changes under the action of moderate forces, if properly regulated, so as to remove the most serious deformities, if the surgeon be only contented to employ a proper amount of time in the effort.

If we needed positive testimony on this point, it would be found in the history of a still pendent case now under treatment in this city, in which an adult has been subjected to a gradual absorption of the outer side of the femoro-tibial articulation. From the pressure of the exterior condyle of the thigh bone, the exterior depression of the tibia was modified by absorption, in consequence of a deficient deposit of ossific matter, until the leg became almost incapable of maintaining the weight of the body. The interior lateral ligament of the knee joint was violently extended, and when the knees were placed in apposition, the legs made with each other an angle of not less than twenty-five degrees. The feet were brought flatly to the ground, by a modification of the form of the ankle-joint. The deformity had been rapidly increasing for months. Yet the application of an apparatus embracing the pelvis, and acting upon the legs in such a manner as to approximate the feet without preventing the motion of the ankle and the knee, is rapidly restoring the legs to their straight position.—Whether this is a mere temporary or a perma-

ment advantage, remains to be determined; but the result will be duly reported.

Dr. Chase has been experimenting largely, of late, on the power of mechanical forces in extending joints affected with false ankylosis, and the result, which will appear in the next number of the American Journal of the Medical Sciences, and which I have been permitted already to peruse in the manuscript, adds weight to the position that the most formidable deformities of the osseous apparatus cannot resist the long continued action of rightly directed mechanical forces. That the bones of children are capable of being remodelled, for good or evil purpose, by such means, is well known—that those of adults, even to the latest age, are capable of undergoing similar changes, it needed not these experiments to prove.—The bandy-leg and the knock-knee, are complaints curable without the aid of tenotomy,—not in youths only, but in adults. The only question, in such cases, is whether the advantage to be gained by the cure will compensate the time and expense of the treatment. This, indeed, should be the conclusion of every thinking man when he becomes aware of the fact that the bones of the chest are rapidly absorbed under the pressure of a thoracic aneurism—that those of the head are enlarged or contracted in order that they may be adapted to the varying dimensions of the brain, *up to the latest period of life*—and that the same causes which produce club-foot in the adult, by being reversed, become capable of undoing the mischief they have done. In fine, it may be laid down as a settled law, that there is no definite limit to the changes of form which may be produced by steady and moderate action upon a bone or a joint, other than what necessarily results from the time necessarily expended in the attempt, and the ability of the soft parts to endure pressure. Nor is the production of considerable pain at all necessary in accomplishing such changes, if the attempt be made with moderation; with due regard to the broad differences observable in different parts of the body in relation to their capacity for the endurance of pressure; and the exercise of proper caution in the avoidance of embarrassments to the circulation.

Even in the present day, then, though most of the apparatus for club-foot is so imperfectly adapted to the purpose in view, the degree of success following the purely mechanical treatment of that disease is sufficient to render tenotomy, under ordinary circumstances, an operation of exceedingly questionable propriety; and such I seriously believe to be, at present, the prevailing opinion of the profession in this city. When the apparatus becomes matured by further study and improvement, this opinion will unquestionably gain ground. Much of the present imperfection of machinery results from an improper desire to enable the patient to walk about during the whole course of

the treatment. During the first stage of the treatment of a confirmed varus of the third degree, *it does not appear possible properly to adapt to the case a suitable instrument*, without forbidding all attempts to walk. During the second stage, *it is possible*, by means of complex arrangements, but it is very doubtful whether it is *desirable*. In the first degree of varus, whether resulting from the treatment of the worse grades, or an original condition of the parts, the freedom of locomotion should not be restricted; for, in such cases, as in the *pes equinus*, the attempt to walk rather aids than interferes with the operation of the instrument. But, it should always be remembered that it is rather the *permanency* than the *force* of action that must be depended on to produce the most beneficial results.

I have spoken, in a former article, of the slight adduction of the os calcis that persists in all the cases yet examined after the cure—so called—is complete, whether tenotomy has been performed or not. For the removal of this by no means insignificant relief of the deformity, I know of no tolerably well adapted instrument. The shoes provided with springs for this purpose are very objectionable, on grounds already pointed out; and, at best, shoes of any kind are extremely inconvenient contrivances where nicety and certainty of action are required. I am about to undertake the improvement of this part of the treatment, and, if successful, will be happy to make known the result.

In varus, the knee-joint is always more or less modified in form, and in old and bad cases, the hip-joint also undergoes corresponding changes. In the knee, this modification appears to consist in the elongation of the lateral and crucial ligaments, together with a partial absorption of the cartilages, permitting the leg to rotate on the thigh, in order to allow the toes to be pointed unduly inward. This produces a very undue degree of mobility in the joint; and, after the nearly complete reduction of the foot to its proper position, mechanical support of a nature calculated to prevent rotation until the joint recovers its firmness, should never be neglected. The character of the changes of form in the acetabulum, and, it may be, in the neck of the os femoris also, is more occult; but the purpose and result of the alteration are precisely similar to those observed in the knee. The application of instruments for the correction of these deformities of the hip-joint is difficult, expensive, and exceedingly annoying to the patient. Fortunately, voluntary efforts and the exercise of constant care in rotating the toes outward may render such apparatus unnecessary.

The principal differences important to therapeutics between the varus and the *pes equinus* are these: The latter is very seldom congenital, and it is very generally spasmodic in its origin. The nature of the causes that usually produce it is such as to warrant the conclusion

that nervous action,—and *that*, commonly of a reflex character,—is the origin of the muscular retraction. The nervous condition, be it merely functional or be it structural, is temporary. If structural, it is liable to end in paralysis. But the muscular *effects* of this condition are persistent; and lead more frequently to the chondroid transformation of tissue than those occurring in any other form of club-foot. In varus, on the contrary, the nervous causes of contraction, if they have been present at any time, have usually consummated their effect before the period of birth; and, the changes of tissue are rather the result of the malposition of the parts than the consequence of the original nervous affection. It follows from these remarks, that tenotomy is more frequently requisite in the pes equinus than it is in varus.

The general wasting of the limb observed in most cases of club-foot, is evidently as frequently the result of the inactivity of the member as of any primary affection of the nerves producing a vice of nutrition. At least, this is obviously true in most instances occurring after birth, and it is a fair inference that the same rule will apply to the majority of congenital cases. It is noticed that in club-foot occurring in early life, and affecting one side only, the corresponding limb is less developed in longitude as well as in circumference: and it would be a curious and useful investigation to ascertain how far the cure of the deformity of the foot is capable of removing this evil in the progress of years.

Having now brought to a conclusion this somewhat desultory series of remarks, it will be well to state a few general conclusions which appear to me to be legitimately deduced from their whole tenor.

1st. When club-foot is the result of spasmodic action, no attempt should be made to remove the deformity either by mechanical force or by tenotomy, until the spasmodic action is exhausted naturally, or has been removed by general or local measures of a totally different character.

2d. When the contracted muscles have undergone a chondroid transformation, tenotomy is preferable to the exclusive use of mechanical extension.

3d. In all other cases, the mechanical extension should take precedence of tenotomy, and the latter operation, if performed at all, should never be attempted in patients whose pecuniary and social condition admit of reasonable delay, until all other means have been faithfully tried without avail.

4th. The mere degree of deformity never precludes the possibility of cure without the aid of the knife.

5th. Tenotomy rather enhances than diminishes the difficulty of effecting a perfect cure by mechanical means.

6th. The foot may be restored to a useful,

but not to a natural position in pes equinus, more speedily by a resort to tenotomy than by the effects of machinery alone.

7th. In confirmed varus of the second and third degrees, it is not desirable that the apparatus should permit the patient to walk; and it is proper that the instrument should be extended to the thigh in order that action of the forces should be rendered as direct as possible.

8th. No degree of deformity unattended with true ankylosis of the tarsal bones, ought to be regarded as absolutely incurable by mechanical means alone.

It is proper to remark, in conclusion, that the necessities of the poor *may* require a resort to tenotomy in order to reduce a foot to an attitude consistent with the performance of labour in the shortest possible time; but this advantage must be gained at the expense of some considerable degree of persistent deformity; and there is every reason to believe that, notwithstanding the evidence of the tenotomists to the contrary, there must generally be a permanent loss of power in the muscles of which the tendons are divided.

CLINICAL REPORTS.

PENNSYLVANIA HOSPITAL.

Surgical Wards—Service of Dr. E. Pease.

Cases discharged, Oct. 27.—1. G. W., æt. 31, admitted July 14, 1841, for deep syphilitic ulceration of the soft palate and fauces of five or six weeks duration. Treated until September 13th internally with syr. sarsap. comp., and locally with the frequent application of the solid nitrate of silver, and the constant use of astringent gargles, without much material or permanent benefit. The syr. sarsap. comp., and all local applications, but a simple gargle of slippery elm mucilage, were then omitted, and the following prescription ordered:

R. Potass. Iodid. ℞jss.
Aque, ʒss.
Bis, die.

This allowance was gradually increased in the course of three weeks to ℞jss. four times a day, and so continued, without giving rise to any unpleasant effects for about two weeks longer; when the man, whose improvement under the remedy had been immediate and rapid, was discharged, to all appearance cured.

Hydriodate of potash in large doses, is a favourite and very efficient prescription of Ricord in Paris for all cases of tertiary syphilis. It was tried, with equally striking good effects, upon another case of analogous but more obstinate character in the same wards of this hospital.

A third patient, in whom there was no ulceration of any account, and for whom the remedy was prescribed in doses of gr. xv. twice a day, derived no advantage from it.

2.—S. W., negress, æt. 21, admitted Octo-

ber 12 for lacerated wound of face, produced by a glass tumbler thrown with sufficient force to break upon the part. She presented a very open ragged cut, at least four inches long, beginning on the forehead above the left eyebrow, curving down across the root of the nose near the inner canthus of the left eye, and terminating on the cheek of that side. The pendulous margins of the wound were brought together with four sutures and some adhesive strips. The hæmorrhage was easily controlled by compression. The wound suppurated freely, and was dressed with cataplasms. Two spicula of glass were removed at the third dressing; the sutures all sloughed away on the third day; the ragged edges of the laceration were rounded off on the fourth; and by the twelfth, cicatrization was complete, except in a portion near the internal canthus of about the circumference of a ten cent piece. This part was touched with nitrate of silver, and dressed with Turner's cerate. Cure effected in 15 days.

3.—M. A. P., negress, æt. 21, intemperate; admitted October 18. A case of lacerated wound, about fifteen lines long, and six deep, immediately over the right eyebrow, and the result of a blow with a stick of wood. This was attended with great inflammation of the adjacent parts, and subsequent free suppuration. Poulticed six days, and then dressed with adhesive strips, and a compressing bandage two days, until she was discharged at her own request. This patient was threatened with delirium tremens, on which account she was allowed, during the first week, a small portion of stimulus, which was gradually reduced.

4.—L. J., negro, æt. 14, admitted October 6, for lacerated right hand from the bursting of a pistol. Palm of the hand, the fore and middle finger and thumb, very much shattered; the latter torn off, except by a string of integuments; all the metacarpal bones fractured and exposed; the joint opened, and the large branches of the radial artery ruptured. Amputation by the circular operation was performed just above the joint within three hours after the accident. The boy fell asleep directly the stump was dressed; the dressings were not renewed until the fourth day, and the wound healed by the first intention, without a single uncomfortable symptom. There were but two ligatures; one came away on the 13th, and the other on the 14th day, the holes of exit being so small as only to allow them to be withdrawn with difficulty. Cured in twenty days.

5.—Oct. 28th. S. G., æt. 26, butcher, temperate, admitted September 26th with extensive laceration of the left hand, resulting from the bursting of a gun. The thumb was nearly detached and much shattered, the palm of the hand greatly torn up, the first and second metacarpal bones broken and laid bare, the wrist joint opened, the radial artery exposed, and the ulnar artery ruptured.

Amputation above the wrist by the circular method was performed within four hours and a half after the accident. Three ligatures were used and a light dressing applied. The stump was re-dressed the second day after the operation, and every day thereafter except the fourth, when it was omitted on account of a disposition to hæmorrhage at the previous dressing. The wound granulated healthily, with very moderate suppuration. The first ligature was removed on the 13th day, the second on the 17th day, and the third on the 19th day. Cured in 32 days. E. H.

DOMESTIC.

Hyper-operating.—We quote, under this head, the following from our cotemporary of the New York Medical Gazette, with whom we shall ever be happy to labour hand in hand in the combat against the prevailing vice of modern surgeons—*brilliant cutting and slashing!* There are hundreds who could remove, *with a grace*, a scrofulous enlargement of a parotid gland, and cut a carotid artery in doing so, but there are few who could share with the departed Sanson, one of the most sincere of Parisian chirurgical students, the well-deserved compliment contained in this article.

M. Larrey (son of the Baron) has recently extirpated the parotid gland, in a girl of nineteen, of scrofulous constitution, in whom the gland, after having been much enlarged, and then reduced to one-half by free cupping, became hard and smooth—presenting at one point fluctuation. M. Larrey concluded that this was cancer, or *would become cancer*, and determined, contrary to the advice of Bielt, to remove it, *yielding to the entreaties of the patient and her friends*. He did remove it (cutting into the external carotid by the way)—the artery was secured, and the patient recovered. The tumour was presented to the Academy of Sciences, who satisfied themselves that it was really the parotid gland.

Remarks.—We put this operation on record as a piece of surgical history, but take leave to accompany it by the expression of our opinion, that a more unjustifiable operation could scarce be imagined. To extirpate the parotid under such circumstances, (a scrofulous patient and the gland beginning to suppurate,) was an operation, the idea of which was just worthy of the man who could blunder as M. L. did in cutting the carotid. The patient had a lucky escape from such hands.

To restore the good humour of those of our readers whom this piece of Barber Surgery may have disgusted, we translate a few lines from the eulogium lately delivered by Cruveilhier over Sanson—here we have the man of

science speaking of and doing justice to another man of science.

"Than Sanson, no one was more profoundly impressed with this great truth, that the perfection of surgery was the knowing how to avoid operations. That an operation, even the most simple, is an extreme measure, which always endangers, more or less, the life of the patient, and which consequently, should only be practiced in cases of the most absolute necessity. His surgical honesty revolted against all those operations undertaken through complaisance, and all the so-called bold operations, which are not required and justified by clear indications."

Honour to the surgical honesty of Sanson—would that there was more of it in the world!
Ed. N. Y. Med. Gaz.

HEALTH OF THE CITY.

INTERMENTS in the City and Liberties of Philadelphia, from the 30th of October to the 6th of November.

Diseases.	Adults.	Children.	Diseases.	Adults.	Children.
Asphyxia,	0	1	Brought forward,	35	22
Apoplexy,	1	0	Intemperance,	2	0
Burns,	1	0	Marasmus,	0	1
Cancer,	1	0	Mania a Potu,	1	0
— Womb,	1	0	Old age,	4	0
— Stomach,	1	0	Palsy,	1	0
Croup,	0	1	Small pox,	3	0
Congestion of			Still-born,	0	7
brain,	1	0	Spitting of blood,	1	0
Consumption of			Tumours,	1	0
the lungs,	12	3	Unknown,	2	1
Convulsions,	1	2	Total,	81—50	31
Dropsy,	2	1			
— head,	0	4			
— Breast,	0	1			
Disease of the					
Brain, *	1	0	Of the above, there		
Dysentery,	3	0	were under 1 year,	16	
Debility	0	3	From 1 to 2	2	
Fever,	1	0	2 to 5	8	
— Congestive,	2	0	5 to 10	2	
— Bilious,	1	0	10 to 15	1	
— Typhus,	2	0	15 to 20	2	
— Typhoid,	1	0	20 to 30	14	
— Hectic,	0	1	30 to 40	12	
Hæmorrhage from			40 to 50	6	
Intestines,	1	0	50 to 60	5	
Inflammation of			60 to 70	6	
the Brain,	0	1	70 to 80	4	
— Bronchi,	0	1	80 to 90	3	
— Lungs,	2	1	90 to 100	0	
— Bowels,	0	2			
	—	—	Total,		81
Carried forward,	35	22			

Of the above there were 8 from the almshouse, 13 people of colour, and 1 from the

country, which are included in the total amount.

PROCEEDINGS OF SOCIETIES.

ACADEMY OF NATURAL SCIENCES.

Though unusually rich in papers of importance in technical Natural History, the Bulletin of the last month presents little that is of immediate interest to the Medical Profession. We extract a single article for the information of comparative anatomists. The communication was made at the session of the 12th of October.

Dr. Goddard stated that he had examined the so called "Missourium Kochii," and found it to be a skeleton composed of Mastodon bones, most of which appeared to belong to a single set, many, however, having been superadded, and others mended and glued together in a manner wholly erroneous.

The following errors were especially noticed:

Spine.—The spine presented the anomaly of 8 cervical vertebræ; and instead of 19 dorsal and 4 lumbar, had 23 dorsal and 10 lumbar vertebræ, making the number of bones in the spine too great by 11. The bones articulated with the 2d and 4th ribs were cervical vertebræ. The spaces between the vertebræ were much magnified by thick wooden blocks placed between them, and the spine was curved upwards, so as to give an exaggerated idea of the height of the animal.

Ribs.—These were redundant in number, and were spread out as much as possible, so as to present the appearance of a wide and flat chest. The first pair of ribs were stuck on the bones of the shoulder, to resemble clavicles—bones which the Mastodon does not possess.

Head.—The head was that of a Mastodon with the top deficient, and a piece of an ethmoidal? bone glued on in front to resemble a snout. The tusks were distorted laterally, so as to occupy a space of 18 feet in width.

Scapulæ and ilia.—These having been deficient, were very ingeniously pieced out with wood, glued over so as to resemble bone.

Feet.—The feet were ludicrously made up of carpal and tarsal bones, and presented the wonderful anomaly of four phalanges to each toe.

Several other discrepancies were observed; apart from which Dr. G. considered the skeleton one of very great interest.

FOREIGN.

Remarks on Partial Fracture of the Radius.
By GIDEON ALGERNON MANTEL, LL.D., F.R.S., etc.—In the admirable lectures on sur-

gery by M. Phillips, it is stated that a fracture may be incomplete, although some surgeons have denied the possibility of the occurrence; and, as conclusive of the fact, a sketch is given of a bone which had sustained such an injury.

Six cases of this kind have occurred in my practice during the last twenty-five years; and as the diagnosis is rather perplexing to a young practitioner, I am induced to offer a few remarks upon an accident which, although comparatively rare, every surgeon is liable to be consulted upon. The first case that came under my notice happened soon after I left the hospitals, and I well remember how difficult it was to account for the symptoms, for I had been taught that partial transverse fracture was impossible. But I am convinced that a bone may be bent, and the convex portion of the curve be cracked, and yet the fracture be incomplete and unattended with loss of continuity, as a tough twig may by bending be partially broken, and remain permanently curved, although not disunited. In the following case, which occurred but a short time since, the symptoms, peculiar to this injury, were well marked.

A fine, stout, ruddy boy, five years of age, son of B. Warren, Esq., of Clapham-park, was thrown from a donkey with considerable force; in falling he stretched out his left arm to save himself, and received a severe concussion on the ball of the left thumb. I saw him two hours after the accident; the palm of the hand was contused, but the principal injury was at the middle of the forearm which was swollen and bent, presenting the appearance of a transverse fracture of the radius and ulna. It was easy to ascertain that there was no dislocation, and that the ulna was uninjured; the head of the radius could be distinctly felt to rotate upon moving the wrist: but this bone was bent, the convexity of the curve being on the external aspect, and there was a corresponding hollow on the ulnar plane: there was no crepitus. Extension made no change in the appearance of the limb. The bone seemed to have been forcibly bent by the approximation of its distal and proximal extremities, occasioned by the violence of the concussion on the ball of the thumb, having produced partial fracture through the convex or bowed part, but not extending across the shaft, so as to occasion a loss of continuity. Leeches and the customary treatment were had recourse to; at the expiration of a week the swelling had subsided, but the curvature remained. In a few weeks after the accident the child could use the limb without inconvenience, and the deformity gradually disappeared. The other cases were attended with similar results: in none did I succeed in altering the bent condition of the bone, although extension was used carefully, and in some instances immediately after the accident; in all, the arm was ulti-

mately restored to its normal state by proper exercise after the inflammatory symptoms had subsided. In every instance the *radius* was the bone fractured, and the patients were under nine years of age. In accidents of this nature, I would suggest that some attempts to remove the curvature by extension must be highly injurious, if sufficiently powerful to be effective; the application of leeches and the antiphlogistic means should alone be employed, for the action of the muscles will ultimately restore the limb to its natural form.—*Lancet*.

We have quoted the above extract for the express purpose of making it the subject of some comments.

The bending of the bones of children was formerly disbelieved by eminent surgeons in this country. The late Dr. Physick positively denied the possibility of such an accident, until a case of this character was presented to his observation by Dr. John Rhea Barton, who was the first to call attention to the subject. By one of those singular trains of events which, though seemingly fortuitous, conflict with all ordinary laws of chance, a number of cases came under his notice, in the course of a few years, at the Pennsylvania Hospital and elsewhere, and the current did not cease until long after we succeeded him as a resident surgeon of that institution. The paper of Dr. Barton, and several observations of our own in lectures and reviews, rendered the knowledge of this class of accidents very general some fifteen years ago; but, from the absence of further comments in the journals, it is fairly inferable that such cases are rare, numerous as were those presented prior to that time. We have met with but one case within the last twelve years!

The present Professor of Surgery in the University of Pennsylvania then insisted upon the existence of partial fracture in every instance, but in most of our cases, which could not have been less than ten or twelve in number, no evidences of fracture existed.

The restitution of the natural form of the limb by muscular action in the cases presented to Dr. Mantel is exceedingly singular, and had we trusted to the probability of such a result in ours, we should have suffered certain disappointment. The forearm, in several instances, was bent into the form of the letter S, and the curvatures were so great that their removal by the muscles was absolutely impossi-

ble. Nor would the stiffness of the bones have admitted of such a result, even if the direction of the muscular forces had favoured it. That osseous fibres in the interior were fractured, is extremely probable; for otherwise it is difficult to understand how substances so elastic as the chondroid and calcareous deposits could have retained their curvature: but that an actual fissure existed in most of these cases, we do not believe. By very firm extension, and by bending the bones in a direction opposite to their curvature, the limbs were restored perfectly to their natural form in every instance, with one exception. This was a case of decided partial fracture of both bones of the forearm, occurring in a boy at the age of about six years. The deformity was seated about two inches above the wrist joint, where the bones formed a very considerable and abrupt angle forwards. The sharpness of the projection at this point clearly showed that the bones were not simply bent, as usual in such accidents; but the resistance to extension as plainly proved that there existed no complete fracture. Decidedly, in this case, the muscles could not have restored the proper position of the bones. We were compelled to apply very considerable force in the reduction, and before it was quite consummated, the remainder of the diameters of the two bones gave way—the only case in which the fracture has been rendered complete by the surgeon that has occurred within the range of our own observation, though we have heard of other instances. The four extremities being all somewhat bent by the accident, a slight deformity remained after the reduction, but it was fortunately too trivial to attract attention or embarrass motion. Whether it ever disappeared with the growth of the patient, who, if living, must be now almost twenty-five years of age, we know not. He was an out-door patient, resorting to the Pennsylvania Hospital as to a Dispensary.

R. C.

In many cases of diseased heart there is a dropsical effusion, without any great obstruction at the valves. In the large majority of such cases, however, this obstruction exists; hence it is the most frequent, though not the only cause. In fact, dropsy evidently depends upon several morbid states of the heart, and

upon a serous or watery state of the blood, which favours its development in many cases when the heart affection is not in itself sufficient for its production. Dropsy is, therefore, much more frequent in advanced cases of heart disease, not only because the lesion is more considerable, but because the blood is necessarily more and more apt to furnish its serous constituents.

As to the heart itself, we may say in general terms that some obstruction to the circulation exists. This may be of an acute kind, and dependent upon a mere inflammation which thickens the blood, favours the formation of fibrine, and the thickening or vegetations of the valves. This is the dropsy which occurs so frequently in endocarditis, and it is doubly apt to occur when the inflammation is grafted upon another cause or pre-existent lesion. Secondly, dropsy may arise from thickening and contraction of the semilunar valves, especially of the aorta, or even from dilatation of the heart when the aortic orifice remains of the natural size, and consequently too small for the easy passage of the large quantity of blood contained in the dilated ventricle; or, lastly, the effusion may depend mainly upon regurgitation of the blood from defective closure of a valve. One variety of this kind is the one alluded to by Dr. Blakiston. In a therapeutic view, it is of considerable importance to distinguish dropsy dependent upon defective closure of a valve with dilatation of the heart, because if the organ is much enfeebled by undue depletion, its power of impulsion may not be sufficient to relieve it of the accumulation of blood, and dropsy is more apt to ensue. These cases should be treated by moderate cupping, and small doses of digitalis combined with assafoetida, camphor, or Hoffman's anodyne. This acts as a regulator of the heart's action, without greatly enfeebling it.

We give the most important of the remarks of Dr. Blakiston on this subject:

As, indeed, dilatation of the heart, with or without hypertrophy, is, of all others, the most constant alteration of this organ, co-existing with cardiac dropsy, it is highly probable that some additional obstacle to the circulation is somehow connected with it, if not dependent upon it: and as the most direct obstruction to the venous circulation must exist on the right side of the heart, it is still further probable that it is connected with dilatation of that side.

Now the dilatation of the right ventricle necessarily gives rise to the enlargement of the tricuspid foramen, unless in such cases where the fibrinous zone, from which its valves spring, shall have to a certain extent lost its natural elasticity. One such case I have seen. The tricuspid valves intended to effect the closure of this aperture during the contraction of the ventricle, are only just sufficient for this purpose. Hunter, and, at a later period, Dr. Adams and Mr. King, have observed that they do not very effectually close the orifice they are attached to in its healthy state. Consequently, if this orifice become dilated, the valves can no longer effect its closure, except they also increase in size. In some cases of hypertrophy such is the case, but I think not so generally as Dr. Hope supposes; at least, as far as my own observations, confirmed by those of Bouillaud, would lead me to suppose.

Hence, regurgitation must not unfrequently take place through the tricuspid foramen during the systole of a dilated right ventricle; and thus a most powerful obstacle is opposed to the venous current, by a quantity of blood being constantly forced back upon it: and although this may in certain cases act as a safety-valve to the lungs, as supposed by Mr. King, yet if at all extensive and continuous, it can hardly fail to offer a most effective obstruction to the circulation returning from the system. This regurgitation through the tricuspid foramen is a frequent and direct cause of cardiac dropsy. The same obstruction would be produced by any other causes which prevent the tricuspid valves from closing the foramen to which they are attached, whether dilated or not. There are two causes of this sort which have hardly received the attention they deserve. The one is a shortening and thickening of the cordæ tendinæ, which Mr. Hodgson tells me he has frequently seen; and the other, a partial or total adherence of the valves to the walls of the ventricle, unaccompanied by any other traces of disease.

A difference of opinion seems to exist between writers on diseases of the heart, as to the sufficiency of the proofs of regurgitation through the tricuspid foramen, both as drawn from observation during life and autopsy after death. Thus pulsation of the jugular veins, synchronous or nearly so with the systole of the ventricles, which have been considered by most writers as indicative of such regurgitation, are looked upon by Dr. Hope, as produced by the force of the right ventricular systole, and altogether independent of the completeness or incompleteness of the tricuspid valves.

It must be borne in mind, however, that considerable hypertrophy of the right ventricle is not unfrequently found in the bodies of persons who during life-time presented no appearance of jugular pulsation. And were it possible that the ventricle could ever contract with such force as to communicate a shock to the

valves and blood above them, which should run up the jugular veins, it could only be in cases of extreme hypertrophy of the right ventricle, and therefore would be or rare occurrence, and would be accompanied by signs of such hypertrophy.

When, therefore, pulsations or obscure fluctuation of the jugular veins are observed, unaccompanied by any very strong heaving impulse of the heart, it is, I think, highly probable that regurgitation takes place through the tricuspid foramen. A perusal of the cases brought forward in this paper will be found very much to favour this view, inasmuch as in all those where venous pulsations or undulations were observed during life-time, the tricuspid foramen was found incomplete, either from its dilatation or the imperfect action of its valves, or from both causes.

That the force of pulsation of the jugular veins is a measure of the power of the right ventricle, and not a measure of the degree of regurgitation and obstruction to the circulation, I readily admit; for in all cases the stronger be the force of the right ventricle which throws the blood back upon the veins, the stronger will be the pulsation propagated up them. Not so as regards the obstruction to the circulation, which depends on the relative proportion between the power of the two ventricles. If both be hypertrophied, the pulsation or shock will be great, and if both be attenuated, the pulsation will be weak, while the obstruction to the circulation is the same in each case; for the venous current, and that of the regurgitating fluid, being both mainly derived from ventricular contraction, when the one is strong it is opposed by the other equally strong; and when one is weak, by the other equally weak; the obstruction is therefore the same in each case, and it is perfectly independent of the shock or pulsation.

If the proportion between the power of the two ventricles be altered, the effect on the circulation is altered; thus, if the right ventricle be hypertrophied and the left attenuated, a weak venous current is opposed by a powerful current of regurgitation, and the circulation is powerfully obstructed; if, on the other hand, the left ventricle be hypertrophied and the right attenuated, a strong venous current is opposed by a weak current of regurgitation, and a feeble resistance is offered to the circulation.

While, therefore, pulsations of the jugular veins may, in certain cases, be considered as indicative of regurgitation through the tricuspid foramen, their absence affords no proof of the non-existence of such regurgitation.

It has been proposed to test the completeness of the tricuspid valves after death by the manner in which they retain fluid in the right ventricle, which has either been forced or injected into it through the pulmonary artery. Mr. King has seldom found the valves to retain fluid when the experiment has been made with

a healthy heart; and I have several times repeated the experiment with no better success, unless I pinched in the base of the right ventricle surrounding the foramen with my hand. This, therefore, would be an unfair test, as it would go to prove that almost all tricuspid valves were incomplete. Bouillaud has compared the measure of the circumference of the foramen with the height of the valves from their apex to the middle of their base. This latter plan gives a very insufficient idea of the area the valves can cover; because unless the circumference of the foramen be retained in its proper position, which is very difficult to do, the valves will be stretched, and will measure more than they can do in action.

He gives three inches eleven lines as the mean circumference of an undilated tricuspid foramen.

I have been in the habit of removing the apex of the heart and laying open the right auricle, and then raising up the tricuspid valves into their plane of closure, by means of my fingers introduced into the right ventricle. By looking at them from the auricle when in this position, a tolerably accurate idea can be formed of the area they cover, and whether any and how much space is left uncovered by them, through which the blood can regurgitate. I have then usually gauged the tricuspid foramen by the introduction of the fingers; its ordinary size not quite admitting the three first fingers up to their first joint, and then measured the circumference after it has been laid open. I regret that the size of the heart should have been noted in such loose terms. I have lately measured its bulk and capacity, by ascertaining the quantity of fluid it displaces both when full and empty, and hope by this means to arrive at a more accurate standard of measurement.—*Lond. Med. Gaz.*

On the Employment of Cold Affusion in the Treatment of Acute Hydrocephalus. By Dr. MÜNCHMEYER, of Verden.—Dr. Münchmeyer observes that the medical world is greatly divided in opinion as to the value of this remedy; some persons greatly extolling its efficacy, while others regard it as altogether useless. He considers it to be a most important remedy, and one which will often save life when all other means have been useless. One great reason why cold affusion has met with so few supporters is to be found in the misconception which has prevailed with reference to the proper time for using it. It is certainly not always advisable to resort to it, and it should never be forgotten that its mode of action differs essentially from that of cold when kept constantly applied to the head. In the employment of cold affusion it is the secondary action of cold, as well as the sudden shock to the system produced by the mode of its application from which benefit is expected, while in the case of cold lotions to the head it is the

primary action of cold which is obtained. Cold affusion then must not be looked upon as a directly antiphlogistic remedy, nor is its employment indicated during the early inflammatory stages of hydrocephalus, but rather when effusion, the consequence of inflammatory action has taken place, and a tendency to paralysis exists. After the subsidence of the violent symptoms of the disease, and when the patient has sunk into a comatose state, with a pale countenance occasionally suffused with a flush, dilated pupils, strabismus, and slow pulse, this remedy will frequently prove of excellent service.

In order, however, for benefit to be derived from it, it must be employed in an efficient manner. Dr. Münchmeyer directs that the patient should be taken out of bed, stripped of his clothes, and wrapped up in some simple covering, (if waterproof the better,) which leaves only his head exposed. He should then be placed in a sitting posture in a bath or tub, and the person who administers the affusion should mount upon a chair and pour cold water upon his head, in a moderate stream from the height of five or six feet. This may be continued for a minute or two, and repeated twice or thrice. The patient should then be wrapped up in a warm sheet and placed in bed, where he should remain till it is thought proper again to have recourse to the remedy. At first, it will probably be requisite to repeat the affusion in the course of an hour and a half or two hours; but as the patient improves the interval may be longer, so that at last it will not be necessary to employ it above two or three times daily.

The immediate effect of cold affusion is, that the patients awake from their comatose condition and begin to cry violently, which they continue to do so long as the water is poured upon them. They afterwards appear exhausted and pale, the skin is cool, the pulse small and very frequent. When placed in bed they usually fall into a dose, the pulse becomes more regular, and the warmth of the skin returns. By degrees as with the repetition of the remedy the patients improve, they begin to have sound sleep, from which they awake in the possession of all their senses, recognize those by whom they are surrounded, and cease to squint. At the same time, too, a sweat, frequently of a critical nature, breaks out upon the whole body, and during its continuance the employment of cold affusion is very hazardous. The patient's sleep becomes more refreshing, and the comatose condition recurs at longer intervals; he begins to notice what goes on around him, the head regains its natural temperature, and the febrile symptoms disappear. The employment of affusion must, however, still be continued for some days, since relapses very frequently occur.

The paper is illustrated by five cases. In three, the employment of cold affusion was

perfectly successful; in one, it produced temporary amendment, and the death of the patient was to all appearance owing to the apathy of the parents, who neglected to persevere in the treatment; while in the fifth, convulsions and death followed affusion while the patient was perspiring profusely.—*Brit. and For. Med. Rev., from Hannoversche Annalen. Band v. Hest 4.*

We do not agree with the author as to the advantages of the cold affusion in acute hydrocephalus, which is essentially an inflammatory disease, and, when once arrived at the period of coma, almost necessarily fatal. But in comatose affections of a different kind, depending upon congestion of the brain, or even upon a nervous stupor (for such there is) without any vascular lesion, it is highly valuable.

We make no apology for the length of the following extract, with the accompanying comments of the British Reviewer, for the case is one of great interest in its bearing upon the value of circumstantial evidence in trials for murder. Carelessness in questions of a medico-legal character saddles society with the continued presence of many of the worst criminals, while there can be little doubt that it sometimes leads to the capital condemnation of the innocent.

Case of Death by Hanging, with numerous Wounds on the Person. By Dr. KRÜGELSTADT, of Ohrdruff.—The deceased was about forty-eight years old; she had borne several children, and enjoyed good health and spirits up to the time of her last accouchment. She then became morose and unhappy, and attempted to drown herself. One morning she was found hanging, quite dead, in a cowshed adjoining her bed-room.

On examining the room in which she slept, some coagulated blood was found near the bed on the floor, and there were marks of bloody fingers on the walls, but there was no trace of blood on the bed itself. From this room to the shed in which her body was found, there were no traces of blood, but there were impressions of bloody hands on the walls of the shed; and the beam from which her body was suspended, as well as the cord, was slightly stained. On the floor beneath the body there were marks of the fæces having been discharged. The roof of the shed was low, but sufficiently high to allow a person to be freely suspended from the floor. There was some dried blood on the face and dress.

The following appearances were met with:

On the tuberosity of the os occipitis, a severe contusion of a livid colour and about two

inches in circumference. On cutting into it, coagulated blood was found beneath, but the skull was uninjured. Over the left temple there were seventeen incised wounds about two or three inches long, some penetrating to the bone, but none involving the temporal artery. On the left side of the os occipitis were two superficial cuts, and on the upper part of the right and left parietal bones were many others of a similar character. On the right temple there were so many deep incisions as to have completely destroyed the temporal muscle. Over the sagittal suture was a long wound penetrating to the bone.

The face was pale and free from any marks of violence; the eyelids were closed, and the eyes not projecting. The mouth was open; the tongue not prominent; there was no appearance of frothy mucus either in the mouth or nose.

Around the neck and above the larynx a tolerably deep depression had been produced by the cord. This extended beneath the angle of the jaw and the mastoid process on either side to the nape of the neck. Notwithstanding the cord had thus caused a deep and well-defined mark, there was no ecchymosis, if we except a slight bluish tint on the left side; nor had the skin acquired that parchment-like character which is often seen in the hanged. Neither the os hyoides, trachea, nor the vertebræ of the neck had sustained any mechanical injury.

The surface of the body was more or less covered with blood which had flowed from the wounds. Over the sternum and region of the stomach numerous but small incised wounds were perceived, which, from their appearance, had evidently been produced several days before those met with on the head. This was proved by the fact that some of them were passing into the suppurative stage.

On opening the cranium, splinters of the internal table were found corresponding to the wound in the region of the sagittal suture. These pressed on the dura mater, but had not injured it. There was no congestion, effusion, or injury to the brain, and the only morbid appearance was an hydatid cyst in one part of the pia mater. The lungs were of a bluish white colour, not particularly congested; a bloody froth escaped, on making an incision into them. The heart and the abdominal viscera were in a normal state. The bladder was empty. The genitals were not turgid, as they are often described to be in females who have died by hanging.

The medico-legal questions to determine here were, as to whether: 1, the numerous wounds on the body had been self-inflicted; 2, whether the hanging was the result of suicide or murder.

The account given of the deceased showed that she had a predisposition to suicide. This is borne out medically by the discovery of hydatids in the pia mater.

In the shed where the body of the deceased was hanging, an axe was found with which she had no doubt produced the injuries to her head. The edge of the axe was sufficiently sharp to account for the production of the numerous incised wounds found in the scalp, and the weapon was long enough to permit her to have produced the *severe contusion found on the os occipitis*. Had such a weapon been used by a murderer, one or two wounds only, and those of a much more severe character, would have been produced. As it was there were no less than *fifty-five* wounds about the scalp, and most of these unimportant.

As negative proofs of this not being a homicidal act, may be mentioned: 1, that there was no mark of violence on the person, discomposure of the dress, or disturbance of the furniture in the room; 2, the act must have been perpetrated at a time when any noise or struggling would have been heard by the neighbours; but nothing of the kind was remarked.

The conclusions of the inspectors in this case were:

1. That the deceased did not die from the wounds found on her person nor from the loss of blood.

2. That death was the result of hanging, operating partly through pressure on the nerves and partly through suffocation.

3. That it was an act of suicide.

[REMARKS. This case is in many points interesting to the medical jurist. Had it occurred in England, it is scarcely necessary to observe that a coroner's jury would, under the circumstances, have deemed an inspection of the body useless, and as only giving rise to unnecessary delay and expense. Yet it is by the accurate observation of cases of this kind that materials can be collected, which will enable a medical witness to prevent coroners' juries from falling into mistakes in future investigations where the circumstances are of a more doubtful character. Out of the hundreds of cases of suicidal hanging which occur in this country, how many bodies are inspected by the order of a coroner? Scarcely one per cent. ! We do not believe that so complete and accurate an investigation of the subject of hanging could be produced from the records of coroners' inquests, although the opportunities for benefiting science by this kind of information have been numberless.

This case possesses more than usual interest: 1, On account of the great number of wounds found on the head; 2, from the *nature* of some of the wounds; thus those over the sagittal suture were sufficient to cause a separation of the inner table of the skull: 3, from the situation. One violent contusion was seen on the os occipitis, a most unusual situation for a suicidal injury. It is remarkable that from the two last-mentioned circumstances concussion of the brain, depriving the person of the power of subsequently hanging herself, had

not resulted, since there was evidently violence enough to account for an immediate loss of sense and motion. On the whole, suicide seems to have been more established from *general* than from *medical* facts; and had the deceased been found thus suspended in an exposed place, a strong suspicion of murder might fairly have arisen in the minds of the inspectors.]—*Ibid.*, from *Henke Zeitschrift für des Staatsarzneikunde*. i. 1840.

Direct Experiments to determine whether portions cut off from Leeches are reproduced. By STEFANO GRANDONI.—Bose, by whom Buffon's Natural History was continued, positively asserts the reproduction of divided leeches; in the Dictionnaire des Sciences Naturelles the contrary is stated. This contradiction with other circumstances induced the author to submit the question to the test of experiment. He divided twenty leeches between the fifth and sixth segments of their bodies, and placed half of them in glasses containing water with little stones at the bottom, and the other half in glasses containing a thin stratum of clay moistened with water. All possible care was taken to maintain them in health. After three weeks, one of those that lived in the clay exhibited on its truncated extremity two white and somewhat convex gelatinous corpuscles, in the centre of which there was a more vividly colored and transparent point; the rest of the section was somewhat rounded, and covered by a very delicate membrane. These signs seemed to render it probable that the experiment was about to succeed; but a month after the leech died, and apparently from the disease of the truncated extremity. Three months after being divided, the sections of the other leeches were found covered by a dense round gelatinous mass, which, after some time, became a very fine and transparent investment, and made the surface of the divided part quite smooth. After about six months, the leeches in the water with the pebbles all died one after the other, without any regeneration of the part that had been cut away. Their weight was neither diminished nor increased. At this time, six of the remaining leeches were taken from the clay, in which they had till lately constantly lain buried, and put in water. These, as well as the three that were left in the clay, were then looked at several times every day; the condition of their trunks was from time to time examined with the aid of powerful lenses, and the number of their segments was counted, but no increase was observed. At the tenth month from the commencement of the experiment, only the three leeches in the clay remained alive; these also died four months afterwards, but without the reproduction of even the most minute ring. It was thus decided that divided leeches are not regenerated.—*Brit. and For. Med. Rev.*, from *Com. dell' Ateneo di Brescia* 1837-8.

The question of the reproduction of parts in the leech becomes a question of greater interest to the general physiologist, from the fact that the relation between this reproductive power in animals, and the degree of complexity in the organization of the nervous system, is a matter of high interest in the discussion of elementary physiological principles in the present condition of the science. Well ordered experiments on this question would be peculiarly important at present; for, although the question may be regarded as nearly settled, it is well known that, in the kindred genus of planaria, the reproductive power is remarkably developed. This investigation would furnish a fine field of research for an ambitious and pains taking student, who wishes to distinguish himself by originality in a thesis. We should be happy to communicate some ideas to any such aspirant who may be disposed to undertake the investigation.

R. C.

Report on M. Louvrier's Treatment of Anchylosis by sudden and forcible Extension. By MM. THILLAGE and BERARD.—The following is the substance of the above lengthy report. M. Louvrier's machine has been employed on 22 patients, of whom only three have experienced ill effects, all the others having escaped injury. Most of the patients suffered excessive pain at the moment of operation. In no case has the ankylosed articulation recovered entire freedom of motion. Those patients most successfully treated are obliged to use a staff in walking; one only walks without a stick, but the restraint is evident.

With regard to the unfortunate cases: in one female, in whom the ankylosis of the knee was complete, and the limb fully flexed, the application of the machine was followed by a very considerable rupture of the skin, luxation of the leg upon the posterior part of the thigh, and abundant suppuration, which terminated in death three weeks after the operation. At the necropsy, the articular cavity was found full of pus, the popliteal artery intact, the popliteal vein full of pus, and its coats thickened. Many muscles were ruptured and softened; the anterior crucial ligaments softened; one of the posterior softened, the other ruptured, attached by one extremity to the tibia, and terminating at its free extremity by an osseous portion, which was evidently part of the condyle of the femur, fractured at the moment of operation.

Another patient suffered excessively acute pains at the moment of operation, and remained some time in a sort of delirium occasioned by the suffering. Gangrene commenced on the

next day, but was limited by the efforts of nature alone, and the patient is actually cured.

In a third case, that of a young woman in whom the ankylosed limb was fixed at a right angle, the straightening was incomplete. M. Louvrier applied a piece of wood to the anterior part of the knee, by means of which he hoped to press the limb into its natural position; but an eschar formed on the next day, and the patient died in six weeks.

In another patient who died from other causes, the articular extremity of the tibia was found to be luxated upon the posterior part of the femur, the internal condyle of the latter being fractured.

The number of these accidents, however, being small, [!] the opinion of the reporters would be less unfavourable, were the ill effects balanced by real advantages; but as the limb after operation is as immoveable as an artificial support, they conclude:

1. That the application of the machine of M. Louvrier is followed by an instantaneous straightening (*redressement*) of the ankylosed limb.

2. That it is not ordinarily followed by any severe symptom, primary or consecutive.

3. That when these accidents are produced, they are frightfully severe, and are ordinarily followed by death.

4. That none of the patients operated upon by this method have entirely recovered the free motions of the ankylosed articulation. We therefore report to the minister that the machine of M. Louvrier, although ingenious, is dangerous in application, for it will be always impossible to determine the nature of the ankylosis, and to foresee the conditions which would offer some chances of success for its employment.—*Ib.*, from *Bull. de l'Acad. Roy. de Med.*

The madness of recent pseudo-surgery, and its recklessness of life and pain, was never more outrageously exemplified than in the horrible apparatus of M. Louvrier, and its actual application in cases of ankylosis. We are not particularly nervous about the use of forces that are in any degree warrantable, having refractured several limbs across our knee after the lapse of five or six weeks from the time of the accident, in order to remove deformities resulting from carelessness and ignorance in the early treatment of the cases; but the disruption of a joint, by mechanical power, in old ankylosis, is a thing not to be even contemplated with patience. We are astonished that the Academy should have gravely entertained a report on the subject. If an attempt to imitate the process should ever be made on this side of the Atlantic, it may be hoped that the folly

may be confined to the brotherhood of natural bone-setters, and that the *courts of law* may take the proper steps on each occasion!

In false ankyloses, even when motion in the joint is almost imperceptible, we have seen enough, of late, to show that the straightening of the limb, or its flexion, if necessary, by means of moderate and permanent mechanical action, is *never hopeless*. When the bones have become amalgamated by the removal or ossification of all the intervening tissues, the operation by means of the saw, as first practised by Dr. John Rhea Barton, though it does not promise the restitution of the old joint nor the substitution of a new one, is far more defensible, terrible as it is. We are glad to perceive that the report of the MM. Thillage and Berard is calculated to give the death-blow to the operation, instead of the patient.

R. C.

Successful Case of Excision of the Head of the Humerus, after Compound Fracture. By Dr. HELLO, of Cherbourg.—An English boy, fifteen years of age, fell from a height on the 16th of April, 1841, and sustained a fracture of the humerus at the situation of its surgical neck. The lower fragment tore the integuments between the great pectoral and deltoid muscles, and appeared through the clothes. There was considerable hæmorrhage at the moment of fracture, but the fracture was almost immediately reduced, and the bleeding ceased. On passing the finger into the wound, it was found full of clots; the inferior fragment of the humerus was denuded of its periosteum to the extent of about six centimetres; the superior fragment, very short, offered a number of small splinters, which were almost attached to the articular capsule. I at once determined to lay bare the shoulder-joint, with the double purpose of resecting the humerus and extracting the head of the bone. A semicircular incision was made, commencing a little below the coracoid process, following the line which separates the great pectoral and deltoid, turning backwards at the insertion of the latter, which was cut to the bone, and remounting to the acromion along the external border of the deltoid. The flap thus formed was turned upwards, and the arteries nourishing it tied. The superior part of the humerus was then carried from the wound, (which was easily done by seizing the condyles to direct the bone,) the periosteum surrounded with the bistoury below the situation where it was torn, and after having placed a piece of pasteboard between the flesh and the bone, the denuded portion of the latter was removed by an ordinary saw. The posterior circumflex artery, which bled freely, was tied; and being cut so near the axillary

trunk, it is not improbable that this might render secondary hæmorrhage frequent after this operation, the formation of the clot being prevented. The axillary artery was so superficial at the bottom of the wound, that I should have passed the ligature around it, would not this have hazarded the success of the means employed to save the limb. The musculo-cutaneous nerve which had been torn was excised, the flap reapplied, three sutures inserted, and the parts were then kept in apposition by adhesive plaster, and covered with compresses of charpie, the whole being maintained by a bandage crossing under the opposite axilla. The forearm and hand were placed in a sling, and the arm was separated from the chest by a soft cushion of charpie. The patient went on without a bad symptom until the 19th, when there was some fever, with fetid and abundant suppuration. On the 23d there was less fever, and the suppuration more healthy. Two ligatures came away. Sutures removed. Internal part of wound cicatrized. All the ligatures had come away by the 29th. On the 1st of May a well-marked intermittent set in, for which quinine was given, and continued for several days. The wound had perfectly cicatrized by the 31st. The patient could seize small objects with the hand, and, having recovered his health, wished to return to England immediately.

This case is a very interesting one, showing that, under very favourable circumstances, a useful limb can be secured to the sufferer, and pointing out a very easy mode of performing the operation. The author states that he followed the same proceeding on a Turk at Marseilles; but he was sent to Smyrna on the fifth day, and the result has not been ascertained.—*Ib., from Ann. de la Chirurg.*

We know not what some of our friends of Cortland county may say to the practice adopted in this case, they being so strenuously opposed to the excision of bone. Nor are we altogether prepared to endorse the propriety of so serious an operation as that described above, without further details than are given in the outline of the case. Denudation of bone in a young lad of good constitution, must be carried very far before it becomes certainly a cause of serious necrosis, especially when the injury is located near the extremity of a long bone, where the vital activity of the osseous tissue is great. Near the head of the humerus, so close is the proximity to the heart, that this vital activity is displayed with remarkable energy. Nor is the splintering of a bone in compound fracture usually a sufficient cause for the excision of a joint,—*in civil practice*,—unless great displacement occurs, or the spiculæ are

coated entirely with ligamentous matter, which limits the supply of blood to the fragments. We mean not to utter a condemnation of the operation, for the proper course of treatment in such cases often depends upon circumstances not very easily described in words; but, having spoken decidedly in favour of the excision of an inch of the tibia in our last number, under less equivocal circumstances, in a case of alleged mal-practice, it is not amiss to temper that opinion with a caution against too hasty intermeddling with fragments in compound fractures generally. It is fortunate that Dr. Hello did not tie the axillary artery. There would have been but doubtful excuse for so doing; and it is rather surprising that the thought should have been suggested. R. C.

On the Temperature of Murine Invertebrata. By VALENTIN and WILL.—The authors have made observations on the proper temperature of seventeen kinds of marine invertebrata, comprising Polyps, Medusæ, Echinodermata, Helices, Cephalopods, and Crustacea. They found that all of them had a peculiar temperature varying with, but always somewhat surpassing, that of the medium in which they lived. The greatest difference amounted to 1° , the least to 0.1° ; the former was observed in *Pelagia denticulata*, the latter in *Aplysia leporina*. With regard to the several classes the differences were among

Polyps, on an average	+0.205
Medusæ	+0.27
Echinodermata	+0.40
Helices	+0.46
Cephalopods	+0.57
Crustacea	+0.60

Which numbers prove an increase of proper temperature directly proportioned to the ascent in position in the animal kingdom.—*Ib.*, from *Müller's Archiv*.

On Spontaneous Combustion of the Human Body. By Dr. JACOBS, of Eupen.—From 28 cases of spontaneous combustion collected and analysed by the author, he concludes:

1. That spontaneous combustion always occurs in living human beings, never after death nor in the lower animals. 2. The subjects were generally very old, the two youngest being fifty and twenty-nine years of age. 3. Women are most frequently the subjects, it having only occurred in two men. 4. It was once preceded by jaundice, once by a malignant ulcer on the head. 5. All the persons were alone at the time of the occurrence. 6. They led an idle life. 7. All were very fat, except three very lean females. 8. Almost all were intemperate. 9. Most frequently a light or some ignited substance was in the neighbour-

hood at the time of the accident. 10. The combustion proceeds very rapidly, and finishes in seven, three, and two hours, and even in one hour. 11. The flame, difficult to be extinguished by water, was very mobile, only destroying the objects placed very near, or in immediate contact with the burning body.—12. The room in which the combustion took place was usually filled with a thick vapour, and the walls covered by a black carbonaceous substance; the floor, ashes, and bones imbued with fat and fetid moisture. 13. The trunk was most frequently completely destroyed, some parts of the head and extremities usually remaining. 14. This combustion has occurred, with only two exceptions, during a cold temperature, in winter, and in the northern regions.—*Ibid.*, from *Bul. Gén. de Thérapeutique*.

Injections of the Iris. By Professor GRIMELLI, of Modena.—The author has made some experiments to support the opinions of Dr. Fario upon the vascular erectile structure of the iris. The substances which answer best for very fine injections of this organ, are olive or walnut oil variously coloured, which penetrates into the most delicate vascular ramusculi without transuding through their coats, and preserves, for a long time, the parts which they impregnate. In injecting the bodies of children, Dr. Grimelli observed, that from being soft and much dilated, the iris became turgid, and contracted more than half its diameter, in the same manner as when the retina is affected by light during life. This fact appears to prove that the iris is composed of a union of vessels forming a disc, in the centre of which is the pupillary aperture, and the circumference of which is attached to the ciliary ligament. By the aid of the lens and microscope, we see that the very fine vessels which constitute the iris are disposed between the pupillary and ciliary circles, under the form of rectilinear and curvilinear radii, curved upon themselves and zigzag; agglomerated and united in an inextricable manner. We observe also some ramifications disposed in circles between the pupillary and ciliary circles, more or less near each other, and always few in number. It results from this disposition of the minute vessels, fixed towards the larger circle and moveable towards the lesser, that the sanguineous afflux and turgescence unfold the iris and contract the pupil, and that the return of blood and diminution of turgescence, fold again or wrinkle the membrane and dilate the pupillary aperture. Thus, contrary to the generally admitted opinion on the muscularity of the iris, as it appears to the author, this membrane is composed of a turgescible or erectile vascular tissue, in which arterial vessels predominate, and Dr. Grimelli is led by analogy to conclude that the muscles of the small bones of the ear are constituted in the same manner.—*Ibid.*, from *Revue Médicale*.